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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/780,540	02/12/2001	Yoshihisa Hirayama	01028	8391

23338 7590 03/16/2004

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1727 KING STREET
SUITE 105
ALEXANDRIA, VA 22314

EXAMINER	
NGUYEN, THONG Q	

ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 03/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/780,540	HIRAYAMA ET AL.	
	Examiner	Art Unit	
	Thong Q. Nguyen	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 January 2004 and 26 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7 and 8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/26/2004 has been entered.

Response to Amendment

2. The present Office action is made in response to the amendment filed on 1/8/2004 in which applicant has amended claim 7 and added new claim 8 into the application. The pending claims 7-8 are examined in this Office action.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The specification fails to provide a proper antecedent basis for the function of the gap defined between the diffusion and reflection plate and the rear side surface of he light guide as recited on last three lines of claim 7. Applicant is respectfully invited to review the specification, in particular, page 5, second paragraph and figs. 1-2 which show that the diffusion and reflection plate is positioned/separated by a gap from the rear side surface of the light guide. However, the specification has never disclosed the function of the gap with respect to the brightness of light.

It is also noted that while the specification fails to provide support for the function of the gap between the plate and the rear side surface of the light guide; however, such a function is not considered as a new matter to the application because the (air) gap between two optical element inherently reduces the brightness/intensity of light from one optical element to other optical element. ***It is noted that the objection to the specification as set forth above was made in the previous Office action; however, applicant has not amended the specification or provided any arguments to overcome the objection.***

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Qiao et al (U.S. Patent No. 5,485,291, of record) in view of Tai et al (U.S. Patent No. 5,668,913, of record), Suzuki (EP 924 549, of record) and Mizobe (U.S. Patent No. 5,057,974).

Qiao et al disclose an edge light for panel display. At columns 2-3 and in figures 2-3, the device comprises a light source system (32) for providing light, a light guide (12) having a front surface (13) facing the light source system, a light discharge surface (21) facing the display panel (31); a reflecting surface (22) disposed opposite the light discharge surface (21) facing a reflector (26) which is disposed parallel to the reflecting surface (22); a rear surface (14) located opposite the front surface (13) wherein the rear surface (14) faces a reflector

(28). The discharge surface (21) and the reflecting surface (22) are disposed in a parallel manner. The light reflecting surface (22) comprises a plurality of grooves each has a front side (23) and a rear side (24). Since the angle formed by the front side (23) and the light reflecting surface (22) is in the range of (1-15 degrees) and the angle formed by the rear side (24) and the light reflecting surface (22) is in the range of (35-55 degrees); therefore, the angle formed by the front side (23) and a line perpendicular to the light discharge surface (17) is in the range of (75-89 degrees) and the angle formed by the rear side (24) and a line perpendicular to the light discharge surface (17) is in the range of (35-55 degrees). The light rays from the light source (32) passing through the front surface (13) of the light guide (12) will have a part of light rays being reflected by the front side (23) of each groove towards the display panel (12) as can be seen in rays (30a) described in column 3 and fig. 2., and other light rays which are not reflected by the front side (23) of the groove will be guided by the light guide (12) to the rear end (14) and then those light rays are reflected by the reflector (28) to return to the light guide and reflected from the facets (24) to illuminate the display (31). Regarding to the position of the reflector (28) with respect to the rear side surface (14) of the light guide (12), Qiao et al disclose that the reflector (28) is placed adjacent the end (14) as can be seen in column 2, lines 62-63. Since the place is placed adjacent to the rear side surface of the light guide; therefore, there is a gap defined between the reflector and the rear side surface of the light guide and such a gap will reduce the brightness of the light emitted from the light

guide to the reflector and the light reflected from the reflector back to the rear side surface of the light guide. As such, the display panel is illuminated by both light rays reflected by the front side (23) and the rear side (24) of each groove formed on the reflecting surface (22). With regard to the light source system and its position with respect to the light guide, at column 3 (lines 50+), Qiao et al teach that the light source can be light emitting diodes, and the number of light source be used in the system can be a single light source which is disposed at the central position of the front side surface (23) of the light guide (12). See column 3 and fig. 3.

There are two things missing from the art of Qiao et al as follow: First, they do not clearly state that the reflector (28) facing the rear surface of the light guide is a diffusion and reflection element having a coating of diffusion and reflection material made by dots, and second, the grooves are continuously formed on the light reflection surface of the light guide.

With regard to the use of a diffusion and reflection element facing a rear surface of a light guide, such a use if known to one skilled in the art as can be seen in the system provided by Suzuki. In particular, Suzuki discloses a light source system having a light guide whose reflective surface comprises a plurality of prism element and a reflector disposed facing the rear surface of the light guide. The reflector (7) as described in columns 9-10 can be made by a film coated in white or a film mixed with a white pigment. Suzuki also disclose two manners in which the reflector is positioned with respect to the rear side surface of the light guide in

which one manner is that the reflector is positioned in close contact with the rear surface. See column 4, lines 46-48. Such an arrangement is understood as that there is a gap therebetween the reflector and the rear surface of the light guide. It is also noted that while the present claim recites a gap between the reflector and the rear side surface of the light guide, the claim has not claimed any specific limitations/dimension of the gap. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the system provided by Qiao et al by using a diffusing and reflection element facing the rear surface of a light guide as suggested by Suzuki for the purpose of increasing the reflectance and diffusion of light returned to the light guide.

While Suzuki discloses that the diffusing reflector (7) is made by a film coated in white or a film mixed with a white pigment; he does not clearly state that the diffusing and reflecting material of the reflector is made by dots on a coating; however, the use of a diffusing reflector made by a coating having diffusing dots is known to one skilled in the art as can be seen in the diffusing system provided by Mizobe. In particular, in columns 4-5, Mizobe discloses a diffusing reflector having a coating containing dot patterns for the purpose of diffusing light beam incident thereon. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the system provided by Qiao and Suzuki by using a diffusing reflector having a coating with dots patterns as suggested by Mizobe for the purpose of increasing the ability of diffusion for the diffusing reflector.

As a result, the system provided by Qiao et al, Suzuki and Mizobe meets all of the features recited in the pending claim except the feature that the grooves are continuously formed in the light reflection surface; however, the arrangement of grooves in a surface in a continuously manner is clearly suggested to one skilled in the art as can be seen in the system provided by Tai et al. In particular, Tai et al discloses an optical guide light member having a reflecting surface with a plurality of grooves. As described in column 10 and shown in figs. 3C and 3E, Tai et al disclose that the grooves can be formed continuously in the surface as can be seen in fig. 3C or the grooves are arranged separated from each other as can be seen in fig. 3E. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the device provided by Qiao et al, Suzuki and Mizobe by using a plurality of grooved arranged in a continuous manner as suggested by tai et al for the purpose of improving the light distribution and/or meeting a particular application.

Response to Arguments

6. Applicant's arguments with respect to claim 7 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. The additional references are cited as of interest in that the U.S. Patent No. 5,134,549 discloses an optical element having a dot pattern formed on a surface thereof; the U.S. Patent No. 5,797,668 discloses that the dot patterns for diffusing light can be formed either on a surface of a light guide or on the reflector; and the U.S.

Patent No. 5,751,386 discloses an illuminating device having a light guide and a reflector disposed on one end of the light guide opposite to a light source wherein there is an air gap located between the end of the light guide and the reflector.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thong Q. Nguyen whose telephone number is (571) 272-2316. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A. Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thong Q. Nguyen
Primary Examiner
Art Unit 2872

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